WHAT IS CLAIMED IS:

1. A device for producing electroluminescence comprising an organic light emitting device including an emissive layer comprising a charge carrying host material doped with a phosphorescent material having a triplet excited state with a triplet energy that is less than the triplet state energy of the lowest triplet excited state of the charge carrying host material.

2. The device of claim 1 wherein the triplet excited state of the phosphorescent dopant material has a triplet energy that is at least 0.1 eV less than the triplet state energy of the lowest triplet excited state of the charge carrying host material.

3. The device of claim 1 wherein the charge carrying host material comprises an electron transporting host material.

4. The device of claim 3 wherein the phosphorescent dopant material has a HOMO energy less than the ionization potential of the electron transporting host material.

5. The device of claim 3 wherein the phosphorescent dopant material has a LUMO energy level lower than the LUMO energy level of the electron transporting host material.

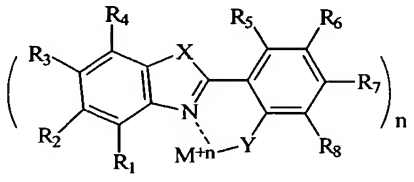
6. The device of claim 3 wherein the electron transporting host material is selected from the group consisting of an aryl-substituted oxadiazole, an aryl-substituted triazole and an aryl-substituted phenanthroline.

7. The device of claim 6 wherein the aryl-substituted oxadiazole comprises 1,3-bis (N,N-t-butyl-phenyl)-1,3,4-oxadiazole.

8. The device of claim 6 wherein the aryl-substituted triazole comprises 3-phenyl-4-(1'-naphthyl)-5-phenyl-1,2,4-triazole.

9. The device of claim 6 wherein the aryl-substituted phenanthroline comprises 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline.

10. The device of claim 3 wherein the electron transporting material comprises a benzoxazole or benzthiazole compound having the chemical structure:



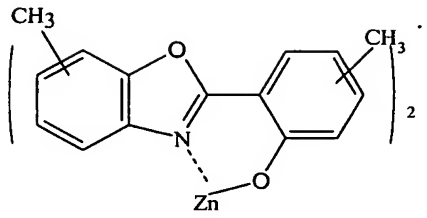
where X and Y are independently O, S;

M represents a metal;

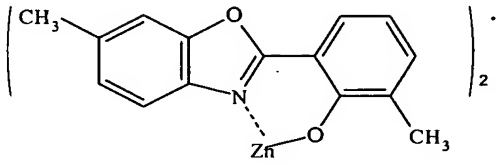
n is a integer from 1 to 3; and

R_1 to R_8 are, independently, a hydrogen atom, an aryl group or an alkyl group.

11. The device of claim 3 wherein the electron transporting material comprises a zinc benzoxazole compound having the chemical structure:



12. The device of claim 3 wherein the electron transporting material comprises a zinc benzoxazole compound having the chemical structure:



13. The device of claim 1 wherein the phosphorescent dopant material comprises fac-tris (2-phenylpyridine)-iridium.

14. An organic light emitting device comprising:

a substrate;

an anode layer over said substrate;

a hole transporting layer over said anode layer;

a first electron transporting layer over said hole transporting layer, wherein said first electron transporting layer comprises an electron transporting host material doped with a phosphorescent dopant material having an emissive triplet excited state;

a second electron transporting layer over said first electron transporting layer; and

a cathode layer over said second electron transporting layer;

wherein said electron transporting host material has a lowest triplet excited state that is of higher energy than the emissive triplet excited state of said phosphorescent dopant material.

15. The organic light emitting device of claim 14 wherein said second electron transporting layer is comprised of a material having an ionization potential at least 0.1 eV higher than the ionization potential of said electron transporting host material.

16. The organic light emitting device of claim 14 wherein said lowest triplet excited state is of at least 0.1 eV higher energy than said emissive triplet excited state of said phosphorescent dopant material.

17. The organic light emitting device of claim 14 wherein the said phosphorescent dopant material has a HOMO energy that is less than the ionization potential of the electron transporting host material.

18. The organic light emitting device of claim 14 wherein the phosphorescent dopant material has a LUMO energy level lower than the LUMO energy level of the electron transporting host material.

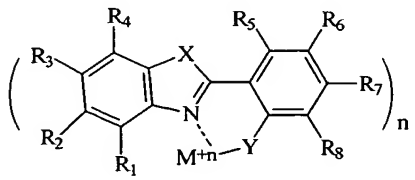
19. The organic light emitting device of claim 14 wherein said electron transporting host material is selected from the group consisting of an aryl-substituted oxadiazole, an aryl-substituted triazole and an aryl-substituted phenanthroline.

20. The organic light emitting device of claim 19 wherein the aryl-substituted oxadiazole comprises 1,3-bis (N,N-t-butyl-phenyl)-1,3,4-oxadiazole.

21. The organic light emitting device of claim 19 wherein the aryl-substituted triazole comprises 3-phenyl-4-(1'-naphthyl)-5-phenyl-1,2,4-triazole.

22. The organic light emitting device of claim 19 wherein the aryl-substituted phenanthroline comprises 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline.

23. The organic light emitting device of claim 14 wherein said electron transporting host material comprises a benzoxazole or benzthiazole compound having the chemical structure:



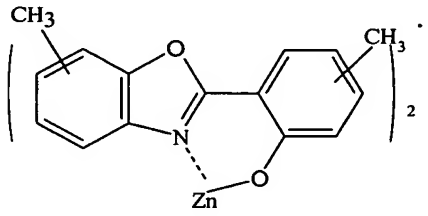
where X and Y are independently O, S;

M represents a metal;

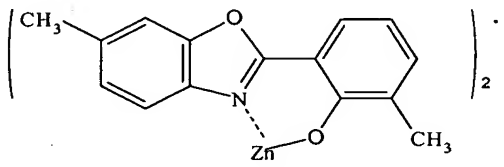
n is a integer from 1 to 3; and

R_1 to R_8 are, independently, a hydrogen atom, an aryl group or an alkyl group.

24. The organic light emitting device of claim 14 wherein said electron transporting host material comprises a zinc benzoxazole compound having the chemical structure:



25. The organic light emitting device of claim 14 wherein said electron transporting host material comprises a zinc benzoxazole compound having the chemical structure:



26. The organic light emitting device of claim 14 wherein said first phosphorescent dopant material comprises fac-tris (2-phenylpyridine)-iridium.

27. An organic light emitting device comprising:

a substrate;

an anode layer over said substrate;

a hole transporting layer over said anode layer;

an electron transporting layer over said hole transporting layer, wherein said electron transporting layer comprises an electron transporting host material doped with a phosphorescent dopant material having an emissive triplet excited state; and

a cathode layer over said electron transporting layer;

wherein said electron transporting host material has a lowest triplet excited state that is of higher energy than the emissive triplet excited state of said phosphorescent dopant material.

28. The organic light emitting device of claim 27 wherein said electron transporting host material has a lowest triplet excited state with an energy level that is at least 0.1 eV higher than the emissive triplet excited state of said phosphorescent dopant material.

29. The organic light emitting device of claim 27 wherein the phosphorescent dopant material has a HOMO energy less than the ionization potential of the electron transporting host material.

30. The organic light emitting device of claim 27 wherein the phosphorescent dopant material has a LUMO energy level lower than the LUMO energy level of the electron transporting host material.

31. An inverted organic light emitting device comprising:

a substrate;

a cathode layer over said substrate;

a first electron transporting layer over said cathode layer;

a second electron transporting layer over said first transporting layer, wherein said second electron transporting layer comprises an electron transporting host material doped with a phosphorescent dopant material having an emissive triplet excited state; and

a hole transporting layer over said second electron transporting layer; and

an anode layer over said second electron transporting layer;

wherein said electron transporting host material has a lowest triplet excited state that is of higher energy than the emissive triplet excited state of said phosphorescent dopant material.

32. The inverted organic light emitting device of claim 31 wherein said electron transporting host material has a lowest triplet excited state with an energy level that is at least 0.1 eV higher than the emissive triplet excited state of said phosphorescent dopant material.

33. The inverted organic light emitting device of claim 31 wherein the phosphorescent dopant material has a HOMO energy less than the ionization potential of the electron transporting host material.

34. The inverted organic light emitting device of claim 31 wherein the phosphorescent dopant material has a LUMO energy level lower than the LUMO energy level of the electron transporting host material.

35. A method of fabricating an organic light emitting device comprising:

forming an anode layer over a substrate;

depositing a hole transporting layer over said anode layer;

selecting an electron transporting host material and a phosphorescent dopant material, wherein said electron transporting host material has a lowest triplet excited state that is of higher energy than the emissive triplet excited state of said phosphorescent dopant material;

depositing said electron transporting host material together with said phosphorescent dopant material over said hole transporting layer, so as to produce a first electron transporting layer comprising the electron transporting host material doped with the phosphorescent dopant material;

depositing a second electron transporting layer over said first electron transporting layer; and

depositing a cathode layer upon said first electron transporting layer.

36. The method of claim 35 wherein said electron transporting host material has a lowest triplet excited state with an energy level that is at least 0.1 eV higher than the emissive triplet excited state of said phosphorescent dopant material.

37. The method of claim 35 wherein the phosphorescent dopant material has a HOMO energy less than the ionization potential of the electron transporting host material.

38. The method of claim 35 wherein the phosphorescent dopant material has a LUMO energy level lower than the LUMO energy level of the electron transporting host material.